

=====

Sequence Listing was accepted.

See attached Validation Report.

If you need help call the Patent Electronic Business Center at (866)
217-9197 (toll free).

Reviewer: Keisha Douglas

Timestamp: Wed Sep 26 17:09:19 EDT 2007

=====

Application No: 10540092 Version No: 2.0

Input Set:**Output Set:**

Started: 2007-09-13 17:48:12.265
Finished: 2007-09-13 17:48:17.801
Elapsed: 0 hr(s) 0 min(s) 5 sec(s) 536 ms
Total Warnings: 31
Total Errors: 25
No. of SeqIDs Defined: 35
Actual SeqID Count: 35

Error code	Error Description
E 201	Mandatory field data missing in <141>
W 402	Undefined organism found in <213> in SEQ ID (1)
W 402	Undefined organism found in <213> in SEQ ID (2)
W 402	Undefined organism found in <213> in SEQ ID (3)
W 402	Undefined organism found in <213> in SEQ ID (4)
W 402	Undefined organism found in <213> in SEQ ID (5)
W 402	Undefined organism found in <213> in SEQ ID (6)
W 402	Undefined organism found in <213> in SEQ ID (7)
W 402	Undefined organism found in <213> in SEQ ID (8)
W 402	Undefined organism found in <213> in SEQ ID (9)
W 402	Undefined organism found in <213> in SEQ ID (10)
W 402	Undefined organism found in <213> in SEQ ID (11)
W 402	Undefined organism found in <213> in SEQ ID (12)
W 402	Undefined organism found in <213> in SEQ ID (13)
W 402	Undefined organism found in <213> in SEQ ID (14)
W 402	Undefined organism found in <213> in SEQ ID (15)
W 402	Undefined organism found in <213> in SEQ ID (16)
W 402	Undefined organism found in <213> in SEQ ID (17)
E 257	Invalid sequence data feature in <221> in SEQ ID (17)
E 257	Invalid sequence data feature in <221> in SEQ ID (17)

Output Set :

```

Started:      2007-09-13 17:48:12.265
Finished:    2007-09-13 17:48:17.801
Elapsed:     0 hr(s) 0 min(s) 5 sec(s) 536 ms
Total Warnings: 31
Total Errors:  25
No. of SeqIDs Defined: 35
Actual SeqID Count: 35

```

[illegible]

Input Set:

Output Set:

Started: 2007-09-13 17:48:12.265
Finished: 2007-09-13 17:48:17.801
Elapsed: 0 hr(s) 0 min(s) 5 sec(s) 536 ms
Total Warnings: 31
Total Errors: 25
No. of SeqIDs Defined: 35
Actual SeqID Count: 35

Error code	Error Description
E 257	Invalid sequence data feature in <221> in SEQ ID (33)
E 257	Invalid sequence data feature in <221> in SEQ ID (33)
E 257	Invalid sequence data feature in <221> in SEQ ID (33)
E 257	Invalid sequence data feature in <221> in SEQ ID (33)
E 257	Invalid sequence data feature in <221> in SEQ ID (34) This error has occurred more than 20 times, will not be displayed

SEQUENCE LISTING

<110> VELASCO IGLESIAS, ANA
 DE LA CALLE, FERNANDO
 APARICIO PEREZ, TOMAS
 SCHLEISSNER SANCHEZ, CARMEN
 ACEBO PAIS, PALOMA
 RODRIGUEZ RAMOS, PILAR
 REYES BENITEZ, FERNANDO
 HENRIQUEZ PELAEZ, RUBEN

<120> THE GENE CLUSTER INVOLVED IN SAFRACIN BIOSYNTHESIS AND
 ITS USES FOR GENETIC ENGINEERING

<130> 13566.105008

<140> 10540092
 <141> 2005-09-22

<150> PCT/GB03/005563
 <151> 2003-12-19

<150> GB 0229793.5
 <151> 2002-12-20

<160> 35

<170> PatentIn Ver. 3.3

<210> 1
 <211> 26705
 <212> DNA
 <213> Pseudomonas fluorescens A2-2

<220>
 <221> misc_feature
 <222> (6080)..(9268)
 <223> SacB: non ribosomal peptide synthetase gene

<220>
 <221> misc_feature
 <222> (9275)..(13570)
 <223> SacC: non ribosomal peptide synthetase gene

<220>
 <221> misc_feature
 <222> (13602)..(14651)
 <223> SacD: hypothetical protein gene

<220>
 <221> misc_feature
 <222> (14719)..(14901)
 <223> SacE: hypothetical protein gene

<220>
 <221> misc_feature

<222> (14962)..(16026)
 <223> SacF: methyl-transferase protein gene

 <220>
 <221> misc_feature
 <222> (16115)..(17155)
 <223> SacG: methyl-transferase protein gene

 <220>
 <221> misc_feature
 <222> (17244)..(17783)
 <223> SacH: hypothetical protein gene

 <220>
 <221> misc_feature
 <222> (1854)..(2513)
 <223> SacI: complementary, methyl-transferase
 protein gene

 <220>
 <221> misc_feature
 <222> (335)..(1861)
 <223> SacJ: complementary, mono-oxygenase
 protein gene

 <220>
 <221> misc_feature
 <222> (18322)..(19365)
 <223> Orf1: aminoacid peptidase-like protein

 <220>
 <221> misc_feature
 <222> (21169)..(22885)
 <223> Orf2: complementary; hox-like regulator protein

 <220>
 <221> misc_feature
 <222> (23041)..(23730)
 <223> Orf3: complementary; glycosil transferase-like
 protein

 <220>
 <221> misc_feature
 <222> (25037)..(26095)
 <223> Orf4: isochorismatase-like protein

 <400> 1
 ctgcaggtgg tttgcgcgcg gaagaccgc cactgccggt gcgctcgttt gaattgcaca 60
 tggcgtggcg tgggtcgcag gataatgatc cgggggagcg gtggttgcgg tcgcggattc 120
 agatgttttt tggcgacccc gatagccttt aattaaactc cactaaaatc ggcgattgca 180
 gagcctgagt acaacacggc tactggactg aagtgggcgc atcgtgccgc atagccatag 240
 tgatctcggt gtgtctcgcc atgtcccggc ccaggtcgta ggtcatgctc ttgcgcattg 300
 ccagcatctt cgtgctccct tgccagctgt ttcaggtcag gctctgacgc gcggatttag 360
 aatcgtccag cagccactca cccaagcgct ccttggccaa ggtcgatttt ttaccgaccc 420
 agatcaccac gccatccggc ctgacgatga ctccctcgcc agcggacaag ctgttattgt 480
 gcgaatcctc gcagatagat gccgtttgca accccggaaa atcacgtcga agatcggcgg 540
 ccagtgcctt ggcacgatga tgtaccagga caaacggccc tgctcgcagc aactgggtca 600

agctctgtcg	tggtaatcgc	tcacctcgg	gaagcaggct	caacaggggt	aaacgtcggc	660
ccaccaagcg	atgatcgcc	cggcgccgca	cactgtcata	gcgcacgccc	tctcccgcga	720
gtgcactgac	caccttctgc	gccacatacg	gggcccgtgt	cgectgcaag	ccgatccagt	780
gaatcagacg	gcctataggg	ccggaagccg	tattgaatcg	gaaaagcaga	tccgtgttgc	840
gcaaggctgc	cgcgcgaata	ggcctacgct	cggcctcgta	actctccaga	agatccatcg	900
gcaatgtggc	ctgtatcaca	cccgccagct	tccaggcgag	gttcgccgcg	tcaccgatcc	960
ccatctgcaa	acettgcccc	ccggcgggga	cgtgggtgtg	agcagcatct	cccagcagaa	1020
atacctccc	ctggcgataa	tgagtgcgca	ggcgtgctg	gctgcggtaa	cgagcgtccc	1080
acagcacctg	cgccaatccg	aaatcggttc	ccagaatatc	tttcatccct	ccggcaattt	1140
cctcgtgggt	gaccggctgt	ttgaccggag	tatccatacg	ttcgttgtct	tcgatactga	1200
cgcgataact	gccatcgggt	aatggaaaca	gggcaaccag	acccttgag	accgaccttg	1260
catggactgc	aggtgaaggc	ggatttctca	agacaacgtc	cgccaccacc	aacgaatgct	1320
tgtagtccctg	cccgacaaac	gaaatatgta	ggagttggcg	gacagaactg	ttgaccccat	1380
cagccccccag	caccagtcg	tagcggcttt	gctgcacgct	gccggtctcg	ctgtgttcca	1440
gggttacctc	aacgtgtaaa	tcgccggcat	ccagagcctt	tagcgcatac	ccacgcttca	1500
gattcacccc	cttgcgattg	acccaatcag	tcaaacccga	ctcggctctga	gactgtggga	1560
tgatcaccat	gtggggatac	tcacaaggga	gtttggaaaa	tgagagcgtt	cggcccgcc	1620
tgtcacccaa	cggcgcgctt	gccagacga	tcccccgacg	tatcatctca	tctgccacgc	1680
cccaggcatt	gagcaactcc	agggtcacgg	gtccaagcc	aaaggcccgg	gaatggggag	1740
aggcagccgg	tcttttatcg	atgagatcaa	ccgtataacc	caactcggcc	agagctgcag	1800
ccacagccaa	cccgacgggc	cccgccccca	cgaccaggac	ctgtttattt	ttaacgacca	1860
tgatcaccca	cctctccaca	gcagggggcg	aacgtggcga	caatgacgtg	ctggtcggtg	1920
acgctcgttt	ccatgctctg	cagcccggcc	gtttgcgcga	gctggattac	ctcatgctct	1980
gatcgataat	ctgccagtga	gcccagcagc	cagttgatca	atgtggtcaa	tcccagccc	2040
gcaggcaggt	tctccaccag	gcagaaaagg	ccctgaggct	tgagcacgcg	acggacctca	2100
ttcaggctga	cagacttgtc	agcccaatgg	ccgaacgaca	tcgagcacac	caccagatcc	2160
atgctttgcg	aggggaatgg	caaggcttcg	gcaactcctt	tgacgaaacga	ggcgaaggga	2220
cgtcgttttg	cggcctcgtc	gaccatgccc	tgagccgggt	cgacgccttc	gaagcgcgcc	2280
tcaggccaca	gagcgaacat	gcgttcgatc	aatgcgcgg	taccacaacc	gatgtccaga	2340
acacgctccg	gtctcgaggt	gcacatccat	cggctcaaca	ttcgcagaca	gtcgtcatgg	2400
gcctggctca	gtttggtacc	gtacttctct	tcatacgtcg	gcgcgatacg	gctgaacgtc	2460
cgcacaaaac	ctggatttcc	attgcttttc	ccgccagaaa	atacgttaga	cattattgaa	2520
catccatata	tcaacagtta	tccgccaaag	accatagtag	agaaaatcca	tcccatccaa	2580
ataaaaatta	aataagtggg	gctaaccgca	atccagggaa	actctgaaaa	ggcccgtac	2640
ttgtcgacgc	ggctgtctgg	aggccgcata	gttactgaac	ttactattaa	aagactgggc	2700
tttttcagag	ccccaccgga	tgttggtctc	ttgtccatca	tttcgggggc	actgtaacat	2760
tctgtttacct	ggctatcgct	tgacttttaa	tctgaacggg	caattatagg	tctaaccgca	2820
acagccccac	ggcgcttaag	ttcgaaaaaa	gtagctgcac	cttgctcaac	tgcatcttgt	2880
aataaggggc	actttacaag	ccgcataaga	cataaatttt	atgctgactc	cccaaacaag	2940
cacgacaagt	aaaaaacact	tgtccaatac	caaggagggt	atacgttgca	agcttcttta	3000
cgtcaaaaag	ttctctgctt	acagcagttc	atcgatccca	gccagccagg	catgttactt	3060
gaagtgcgtt	ttcatgtgat	cacccatctt	tctacttcgc	agttggtatc	gcgtatcgag	3120
agagtggctg	agcgacatgc	gtcttttacg	cagcgttttg	tcatgcgcaa	tggcacttac	3180
tggattgaac	aagccccacc	gcaacaacga	cgtactgcg	tggtagccac	ctatgatgaa	3240
gcacgcaccg	atgcactgct	ggcgccgagc	cgcgagcaca	tcggggttga	gtctgagcgt	3300
ttgttccgcg	ccgaagtcgt	tgagcgcagc	gacggacaac	gctacttggt	cttccgaatt	3360
catcacatca	tcgccgacct	gtggtctgtc	ggcctcctga	ttcgagactt	tgccgaagac	3420
tgtatggacc	gctccagcat	caccttggcg	tcaagaccga	ttgcccgtt	gatcgaccct	3480
gagttctggc	ggcaccaaat	gtcacaggac	actccgtttt	ccttgcccat	ggcctccctg	3540
gaacagcaca	cggaccgcgc	catggtgctg	tcttcgttcg	ttattgatca	ggagagcagc	3600
gctgacctgg	ccgcctggc	cacagcctgc	gcggtaaccc	cgtacaccgt	aatgctcgcc	3660
gcacaagtat	tggcgctgtc	cagaatcggc	cagagtggcc	gtctgtcact	tgcggtgacg	3720
ttccatggcc	gcaacagggg	caacaaggat	gcggtagggt	acttcgccaa	tacgcttgcc	3780
gtgcctttcg	atgtcagcga	atgcagcgtg	ggcgagtttg	tcaaacgcac	cgcgaagcgc	3840
ctggatgagg	cctcaaaagc	cagcgtcggg	gccggttacc	ccgaattggc	agagttcatg	3900
acgccgctgg	gatgggctgc	gaccgccccg	accaatgcgg	tgatttacca	gcaggatatg	3960
ccaggcatgc	caagaggatt	ggcggcggct	ctgctgggat	tgggcacggg	gcagttgggc	4020

gagatggcgc	tgaccgcgga	acaggcacccg	cccagcatcg	gcccgtttgc	cactgcgctg	4080
ctgctgacgc	gccacgacgg	caagctgcat	ggccgggtcg	aggtcgatcc	tgcgacgcat	4140
cccgtttggc	tggcagaggc	gttagccaga	cagttcgctg	tgatcctgcg	ggaaatgggtg	4200
cgtgatccac	agggcagact	gtcagccttg	ccagcgtgcc	tgttacacca	acaaaaatac	4260
ccgagccaa	cgccggccggc	gcctgcgtca	gaaacattgg	tagccacctt	tctccggcaa	4320
gtcgccatca	cgccggacaa	gcccgcgctg	cgtacgcgcg	agggcagcat	cagctatagc	4380
gaattggcca	gtcgagtcgc	caggetctcg	gcagccttgc	gcgtacgcgg	cttcaaacct	4440
gaacagaccc	tggcaatact	cctgcctcgc	gatatcaatc	tggtagccgc	tctgctggcg	4500
atcatggcct	gcggtggcag	ttatgtgcc	ctcagtgacg	cgaacccgcg	cgaactcaac	4560
cgttcgattc	tgaccagggc	ccgttgccgc	gcgattctca	cggatcagga	gggtttgacc	4620
cgtttcgctc	acttggcgcc	ctgctgggtc	ttgagcgacc	tgctgtcgat	gcccgcgccc	4680
ccgctgcagg	accagtccaa	gcttcaagcc	aaggcctata	tcctatttac	cagcggctcc	4740
accggtgaac	caaaaggcgt	ggcgatcacc	catgctaata	ccgccaacct	gctgcgttgg	4800
gcggctctcg	attgtggccc	cgagtacctg	gcgcaaacac	tggcggcaac	ccccactacg	4860
ttcgatcttt	cgattttcga	gatgtttgct	cccccttatg	tcggtggctg	cgtacagccc	4920
gtttcctcgg	tcattggcgt	gatcgacaat	ccggccctgc	taaagggcac	aacactgata	4980
aatacgggtg	cgtcggtggc	cgacgctttg	ttgcagcatg	atgtactggg	gccttccttg	5040
cgcattgctc	acctcgccgg	agaacccctg	aaccgggata	tttacctgcg	gcttcaggca	5100
aaactgaccg	ccacacgcat	cgtcaacctc	tacggcccga	cggaaacaac	aacctattcc	5160
accgccctgg	tgatcgagcc	cgcaacaaca	gagatcacca	tcggttttcc	actgtatggc	5220
acctgggtgg	atgtcgttga	tcaaaacatg	caaagcgtcg	gtatcggtgt	acctggcgag	5280
ttgatcattc	atggacacgg	cgtggcgcaa	ggctatgtca	gcgaccccg	gcgtagcgcc	5340
gcttctttcc	tgcgggcata	cgatggcttg	cgttgctacc	gcacgggaga	ccgtgtccgc	5400
tggttgcccg	atggccgect	ggactttatc	ggtcgagagg	atgatcaggt	caaagtctgc	5460
ggtttcgggg	tcgagttggg	gcctgttcag	gcggcactgc	atgccattga	gacgattcat	5520
gaatccgcag	tagtcgttgt	gccgaaaggg	cagcagcgca	gcacgtggc	gttcacgtgc	5580
ctcaaagcgc	cgagcgaaga	tgaagcgggt	cagcgcataa	acatcaaaca	acacttactc	5640
ggcgtactcc	cctattacgc	actaccggac	aagtttattt	ttgttaaagc	actgccaaaga	5700
aacacacatg	gaaaaatcga	cagaacgctg	ctcttgcaac	atgagcccca	gactgagcaa	5760
gaaagcgcca	tgcgagatgc	gaccgacgtc	gaacatcgca	tcgccaaactg	ctggcaaacc	5820
atcatcggac	accccgctca	actccacgaa	aacttcctgg	acattggcgg	ccactcgctt	5880
tcgcttacgc	atttaacggg	cctactgaga	aaagaattta	atattcataat	ttctctacac	5940
gacctctgga	tcaggccaac	catagaacaa	caggccgact	tcattcataa	gttgcaaaat	6000
tcggtattga	caaaacctgc	cgccgcgcca	atcccgcgac	ttgaccgaaa	gatctctcat	6060
cattaatcag	gagtagcgca	tgagcgtcga	tacatgcagg	actgcaactt	tcctcgctgc	6120
atagcgccag	gaacagatct	ggtttctgaa	cgaactaaac	ccgcactctc	aactggctta	6180
taccctggcg	atgaaagtat	ctatcgccgg	gaaattgaac	acactgcggt	tgacgcgtgc	6240
ggtcaaccaa	gtggtggcct	cccaggaaat	tttgagaaca	tcattcgcc	ataaaaacca	6300
gaagttgagc	caggtcattt	cacctcgcgc	gacactgcc	attcgacgg	cgcactgcat	6360
tgacgatgta	cctgggctgc	aacgcctgat	caacatggaa	gcccagcgtg	gctggctcgt	6420
gagcagcgcg	ccactgtacc	gcttgctgct	gataaaaacc	ggcgaccagc	aacatgagct	6480
ggtcatctgc	accaccata	tcgtctgcga	tggcatctcg	ctgcaactgc	tgctgcaaaa	6540
aatagtcagc	gcctatcaag	gccaaagcga	tgggcgggtg	ctcacaagtc	cggatgaaga	6600
gacctgcaa	ttcgtagatt	atgcggcctg	gtcaaggcag	cacgaatatg	ccggtctcga	6660
gtactggcgc	cagcaactgg	ccgacgcccc	gacaatcctg	gatatttcga	caaaaaccgg	6720
ccgaagtgag	caacagacat	ttctcggcgc	gcgaattccc	gtcgagttca	gccaccacca	6780
atggcaagca	ttgcgccaga	tattcagacc	ccagggtatc	tcctgcgcgg	cgggtgttct	6840
ggcggcctac	tgcgtcgctc	tgacccgctc	ggccgagcag	gacgacattc	tgatcgggct	6900
gccaaactca	aatcgccctgc	gtccggagtt	ggcacagggtg	atcggtctac	tgtccaatct	6960
gtgcgtgttt	cgcagccagt	atgctcacga	ccagagcgtc	acagactttc	ttcaacaggt	7020
tcaattgacc	ttaccaact	tgatcgagca	cggggagacg	cctttccagc	aagtactgga	7080
aagtgttgag	catacccggc	aagccgggtg	gacgccgttg	tgccaagtac	tgtttggtta	7140
tgagcaggac	gttcgacgca	cgctggatat	cggcgacctg	caattgacgg	tctcggtatg	7200
ggacacgggg	gccgcacgcc	tggatctatc	gctgttcttg	ttcgaggacc	acgaactcaa	7260
cgtttgcggg	tttctggaat	atgccacgga	ccgtatcgac	gccgcactcg	cgcaaaacat	7320
ggtgcgcatg	ctcagcagcg	tgctacgcga	gttcgttgcg	gcgcccgagg	cgccgctcag	7380
cgaagtacag	ctggggggcg	cggattccca	agcccgagca	cctgcgcatg	caccagcatt	7440

cccaagcgtg	ccggctcgtc	tgttcgcctt	ggcagacagt	cacccaatg	cgaccgcgct	7500
gcgtgacgag	caaggtgaac	tgacctatgc	gcaagtttgc	caacagattc	tgcaggcagc	7560
ggccactctg	cgagcccagg	gggcgaaacc	tggaaacctg	atcgcggtca	tcggcgagcg	7620
cggtaacccc	tggttgatcg	ccatgtttggc	gatctggcaa	gtcggcggta	tctatgtgcc	7680
attgtccaag	gacctgcccg	aacagcgcct	gcaaggcatc	ctggcggaac	tgaaggggc	7740
catactgatt	accgacgaca	ccacgccgga	acgcttcggg	caacgtgtga	cgctgcccac	7800
gcacgcctta	tgggcccgatg	gcgcaacgca	tcacgagcgg	cagacgacgg	acgccagccg	7860
gctgtctggc	tacatgatgt	acacctcggg	atcgaccggg	aaaccgaaag	gcgtgcatgt	7920
cagccaggcc	aacctggtcg	cgacctgag	cgatttcggc	cagctgctgc	aggtgaaacc	7980
cagcgatcgg	atgctcgcac	tgacgacctt	ctccttcgac	atttcgctgc	tcgagctgct	8040
gcttccctcg	gtccaggggcg	ccagcgtgca	aatcgctgtc	gcacaggctc	aacgcgatgc	8100
ggaaaagctc	gcgggctatc	tgcgagacct	tcggatcacg	cttgttcagg	ccacaccggg	8160
gacctggaga	ctattactgt	cgacaggctg	gcagccacgg	gaaagcctga	ccctgctgtg	8220
cgggtggcgaa	gcgctgccac	aggatctggc	ggacagggtg	tgcttgccgg	gcatgacctt	8280
gtggaacctc	tacggcccca	ccgaaacaac	aatctgggtc	acggcctgcc	gcctgcaacc	8340
gggtgcgccg	gtgcaactgg	gccatcccat	tgcaggtacg	caaatagcc	tgggtggatcg	8400
gaacctgcmc	agcgtgcccc	gaggggttat	cggtgaactg	ctgatttgcg	gccccggcgt	8460
cagccagggc	tactatcgca	acccggttga	aacagccaag	cggttcgtac	cggaccgcca	8520
tggttcaggt	aagcgcgcct	atctgaccgg	cgaccggatg	cgcatgcagc	aggatggttc	8580
gctggcctat	atcgcccgac	gtgacgacca	gatcaagctg	cgcgccacc	gtatcgagct	8640
gggagagatc	gagacagcgt	tgcgaaaact	gcccggcgta	cgggatgctg	ccgcccaact	8700
ccatgaccag	gacccaagtc	gaggcataca	ggcctttgtc	cagctttgcg	caacggtcga	8760
tgagagcctc	atcgatatag	gccagtggct	ggaaacactg	cgccaaacgc	tgctgaggc	8820
gtggctgcct	actgagtatt	acaggatcga	tggcatccct	cttacctaca	acggcaaacg	8880
cgacaggaag	cgctcctgc	accaggccgt	caggtcgcaa	acactcagtc	tgagggtggc	8940
tcccagcagt	gacaccgaga	cccgggtgca	gcagatctgg	tgcgagctgc	tcggtctcga	9000
ggatatcggc	gttacggatg	attttttcca	gttaggcggc	cactccattc	tgggtggcgcg	9060
catggtcgag	cgcctcgaaa	ccgcgttttg	acggcgcgta	cctatcgag	atatctatct	9120
ttctccgacg	atcgcccgtg	tggcgggcgc	gctggactcc	atgacatttg	aacaaggact	9180
ggcgcacac	agcgtgaaag	gcgattggga	gttcaccgcc	atcagccttc	aacacaacgc	9240
cgacagcaca	gcgcgcgctc	aggagagatg	aatcatgcac	agccccacta	tcgatacttt	9300
cgaggccgca	ctgcgctcat	tgcgcgctgc	ccgcgacgca	cttggtgcct	atcccttgtc	9360
cagcgaacaa	aagcgcctct	ggttactggc	ccaactggcg	ggcacggcaa	cgttgccggg	9420
aacgggtgct	tatgcattca	ccggcacggg	ggaccttgct	gtcgtgcagc	agaacctgag	9480
cgcgtggatc	gcacacagcg	agtccttacg	cagccttttc	gtcgaagtac	tggaaacgcc	9540
cgtcaggctt	ctgatgccta	cgggcctggg	gaaactggag	tacttcgac	gcccgccatc	9600
cgatgccgat	atggccgagc	tcataggcgc	cgcttttgaa	ctcgacaaag	ggccgttgct	9660
gcgtgctgtc	atcactcgaa	ccgctgcaca	acagcatgaa	ttgcatctgg	tcggccatcc	9720
tattgtcgtg	gacgaacctt	ccctgcagcg	cattgcccac	accctcttcc	agaccgaacc	9780
cgatcatcag	taccccgccg	tcggtgcgat	cgccgaggtg	ttccagcgcg	aacagacact	9840
ggcacaggat	gcgcaaatca	ccgaacaatg	gcagcaatgg	ggaataggcc	ttcaggcgcc	9900
tgcggcaacc	gaaattccga	ccgaaaaccc	ccgccccgct	atcaagggct	cagatcgtca	9960
agtacatgaa	gcccttactg	catggggcga	ccaaccgcga	gcagaggccg	aaattgtcag	10020
cagttggctg	accgtgctga	tgcgctggca	gggatcgcaa	tcggcgcttt	gcgcaatcaa	10080
ggtgcgcgac	aaggcgcatg	ccaacttgat	cggcccgactg	caaacctacc	tgccgggtccg	10140
cgttgatatg	ccggatggca	gcacctgggc	acaactgcga	ctccagggtg	aggaacagct	10200
caatggcaac	gaccatccgt	ccttttccac	gctgctggaa	gtttgcccac	caaagcggga	10260
cctgagtcgc	acccctact	tccaaaccgg	cctgcagttc	attgcgcacg	atgttgaaca	10320
gcgcgacttc	catgccggca	acttgacacg	cctgccaacg	aagcagccaa	gcagcgacct	10380
tgacctgttc	atctcctgct	gggtaagcga	cggcacgctt	ggcctgacgc	tggattatga	10440
ttgcgcgctg	ctgaattcga	gccaggtcga	ggttctggcc	caggcgctca	tcagcgtatt	10500
gtcagcgccc	ggtgaacagc	caatcgcaac	cgttgcgctg	atgggcccagc	aaatgcagca	10560
aaccgtcctg	gctcaggccc	acggcccccg	cacgacgcgc	ccgcaactga	cactgaccga	10620
atgggtcgcc	gccagcacgg	aaaaatcccc	gctggcggtt	gcggtgatcg	accacggcca	10680
gcagctcagc	tatgcagagt	tatgggcaag	agctgcactg	gtagcggcga	acatcagcca	10740
gcatgtggca	aagcctcgga	gcacatcgcc	tgtagcactg	cccagatcgg	ctgaatttat	10800
tgcagcgctg	ctgggggtag	tgcgagcagg	tcatgcgttc	ttgcccatcg	atccccgcct	10860

gcccaccgac	cgcattccagt	tcttgattga	aaacagtggc	tgtgagttgg	tcattacctc	10920
tgatcagcaa	tccgtggagg	gttggccgca	ggtcgccagg	atacgaatgg	aggcgcttga	10980
tccagacatt	cgtggtgg	cgcgcagcgg	gtcagccac	agcgatgccg	cctacctgat	11040
ctatacctcc	ggcagcaccg	gcgttccgaa	gggagtcgtt	gtcagacc	ggcaagtagt	11100
gaataacatc	ttgtggcggc	aacgaacctg	gccgctgacg	gcacaggaca	acgtgctgca	11160
taaccattcg	ttcagcttcg	atcccagcgt	ctgggcgttg	ttctggccgc	tgctgaccgg	11220
tggcaccata	gtgctggcgg	atgtcagaac	catggaggac	agcaccgccc	tctcgcacct	11280
gatgatccgc	catgatgtca	gcgttctggg	tggcgtaccg	agccttctcg	gtacgctgat	11340
cgatcatcca	ttcgccaatg	attgccgggc	gtcaagctg	gtgctcagtg	gcggcgaaagt	11400
cctcaacccc	gaactggcac	acaaaattca	aaaggctctgg	caggccgacg	tcgccaacct	11460
ctatggccct	accgaagcga	ccatcgatgc	gctgtatttt	tcgatcgaca	aaaatgctgc	11520
cggcgccatc	cggattggct	atccaatcga	caataccgac	gcttatatcg	tcgacctcaa	11580
tctcaacca	gtcccgccag	gcgttccggg	agaaatcatg	cttgctggcc	agaaccttgc	11640
gcgcggctat	ttgggcaaac	ctgcgcaaac	cgcgacgcgc	ttcctgcca	acccatttgg	11700
caacggacgc	gtgtatgcaa	cgggcgatct	gggacgacgc	tggtcatcgg	gggccatcag	11760
ctacctgggc	cgacgcgacc	aacagggtgaa	gattcgcggg	catcgcatcg	agcttaacga	11820
agtcgctcat	ctgttgtgcc	aggcgcttga	gctgaaggaa	gccatcgtct	tcgcccagca	11880
cgtggaacc	gaacaggcac	gcctggtggc	ggccatcgag	caacagccag	gcctgcacag	11940
tgaaggtatc	aaacaggaat	tgctgcgcca	cttgccagcc	tatctgatcc	ctagccagct	12000
cctgctattg	gatgaactgc	caagaaccgc	caccggcaag	gtcgacatgc	tcaagcttga	12060
tcagttggca	gcccctcagc	tcaatgacgc	cgggggcacg	gaatgccgtg	cgccacgtac	12120
cgaccttgaa	caatcggtca	tgacggattt	cgcccaagta	ctcggcctca	ctgcggtaac	12180
gccggacacg	gatttcttcg	agcaaggcgg	caactcgatt	ctactcacgc	gcctggcagg	12240
caccttgtct	gccaaatacc	aggtgcagat	tccactgcat	gagtttttcc	tgactccgac	12300
cccggcagcg	gtggcgcagg	caattgaaat	ctaccgtcgc	gaaggcctca	cggcactcct	12360
gtcacgccag	catgcacaaa	cgtgggagca	ggacatctac	ctggaagaac	acattcggcc	12420
ggatggctta	ccacatgcca	actggtacca	gccttctgtc	gtgtttctga	ccggagccac	12480
cggctacctg	ggactgtacc	tgatcgaaca	gttgctcaag	cgcaccacca	gccgcgtcat	12540
ctgcctgtgc	cgtgcaaagg	atgccgagca	tgccaaggcc	aggattcttg	aaggcctgaa	12600
aacctaccgc	atcgacgtag	gcagcgaact	gyaccgggtg	gagtacctca	cgggcgacct	12660
ggcgttgccg	cacctgggcc	tgagcgagca	tcaatggcaa	acgctggccg	aagaggtcga	12720
tgtgatttat	cacaacggcg	ccttgggtcaa	ctttgtctac	ccctacagcg	cactcaaggc	12780
gaccaacgtg	ggaggcacgc	aggecattct	ggaattggcc	tgcaccgctc	gactcaagag	12840
tgttcagtat	gtctccaccg	tggatacgct	cctggcgacg	catgtcccc	gcccttttat	12900
cgaggacgat	gccccctgc	gttccgcgct	cggcgtacca	gtgggctaca	caggcagcaa	1296